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[54] **FILTERING DEVICE FOR A WASHING MACHINE**

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[52] **U.S. Cl.** ..... **210/167**; 210/237; 210/238; 210/409; 210/416.1; 210/456; 68/18 F

[58] **Field of Search** ..... 210/167, 237, 210/238, 416.1, 409, 456; 68/12.13, 18 F

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[57] **ABSTRACT**

A filtering device for use in a washing machine is disclosed. The filtering device has a filtering web disposed so that a planar direction thereof is equal with a flowing direction of the washing water in the pipe in which washing water circulates, and many ribs disposed on the filtering web to form a lattice. Longitudinal directions of the ribs have a predetermined angle against the flowing direction of the washing water. The washing water flowing in the pipe during a draining operation is guided toward the edge areas of the filtering web, so it is distributed to be in uniform contact with the filtering web. The dirt having been adhered to the filtering web during the washing operation is efficiently removed by the washing water guided by the ribs during the draining operation.

3 Claims, 3 Drawing Sheets

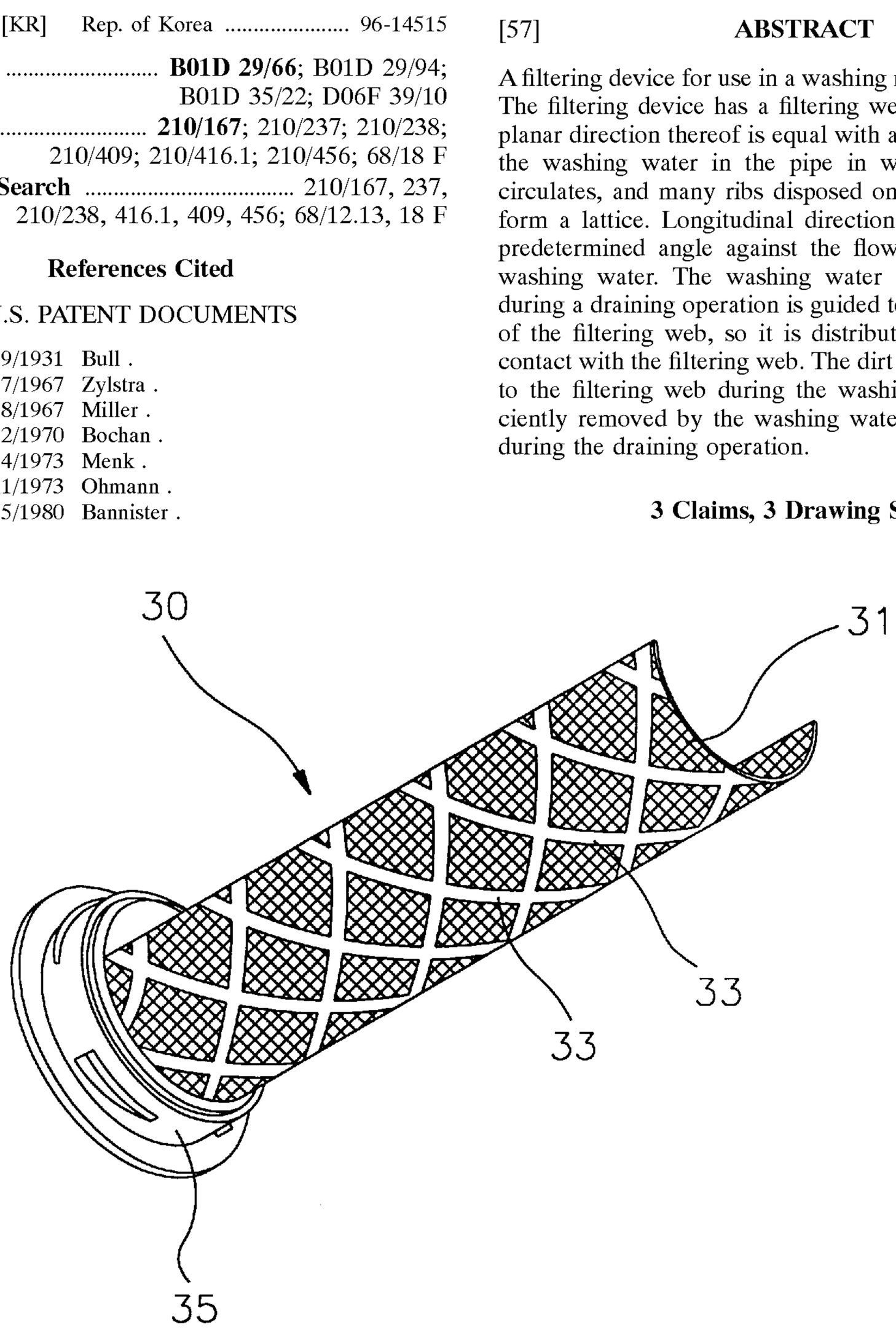


FIG. 1
PRIOR ART

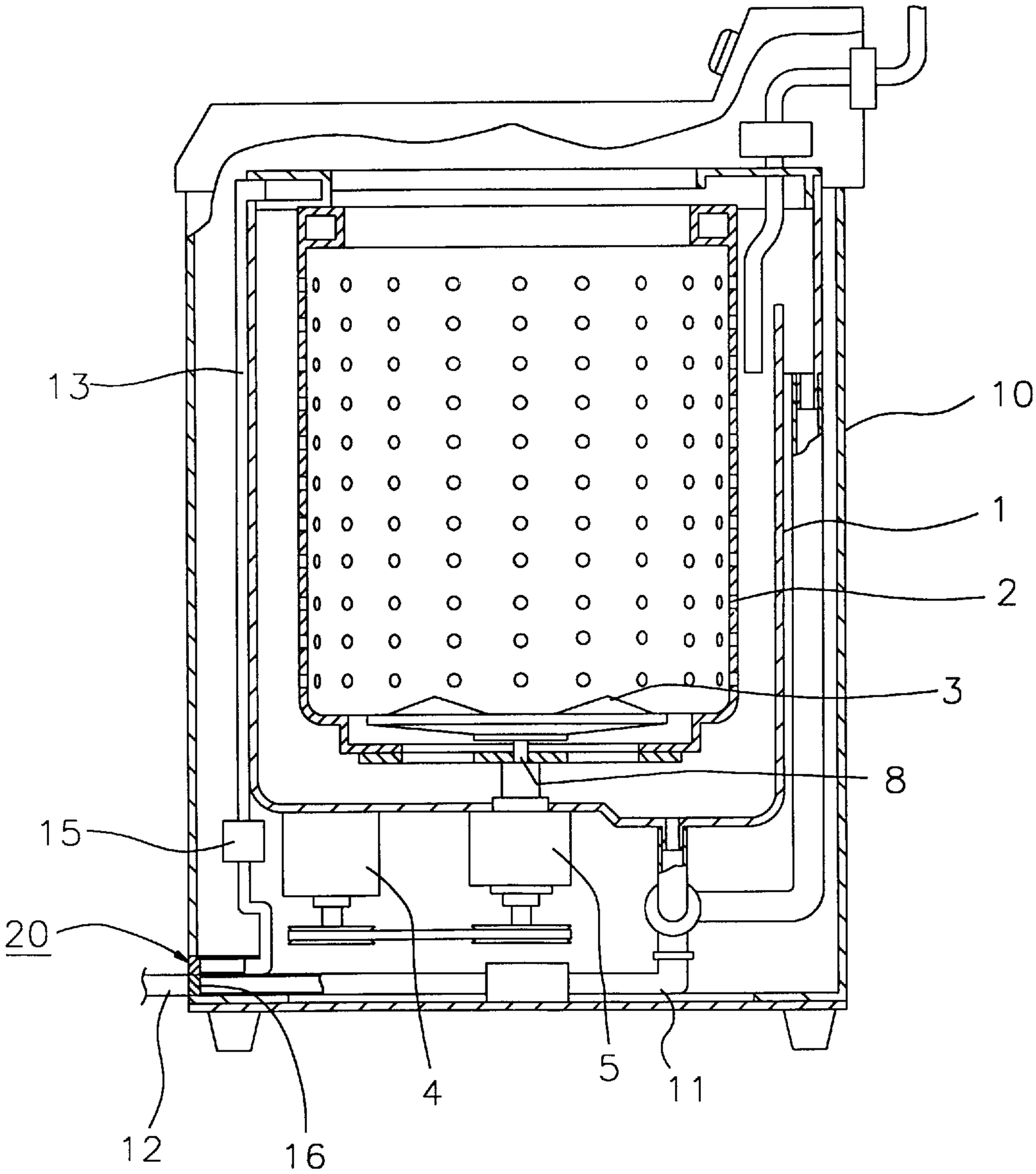


FIG.2
PRIOR ART

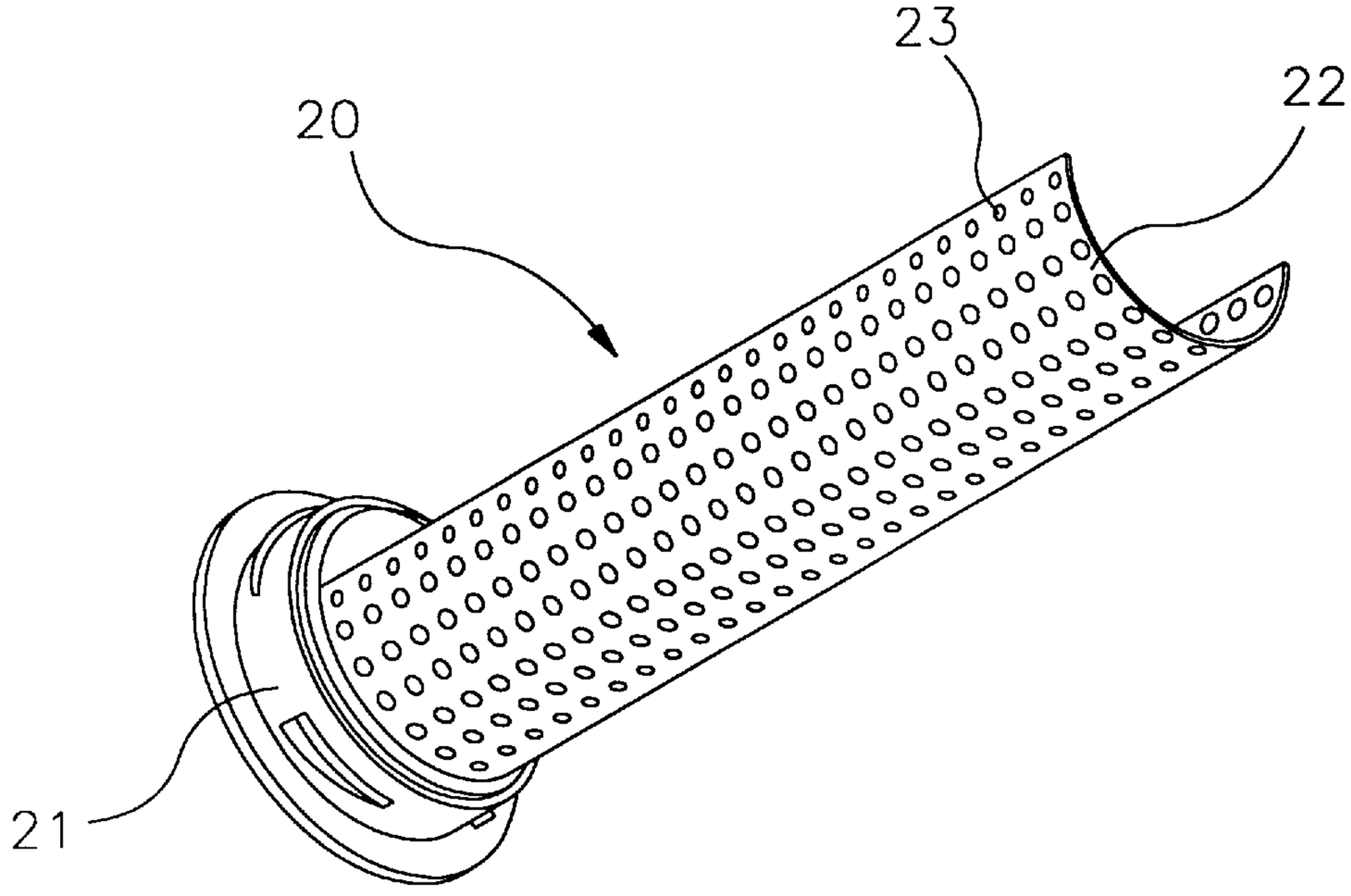
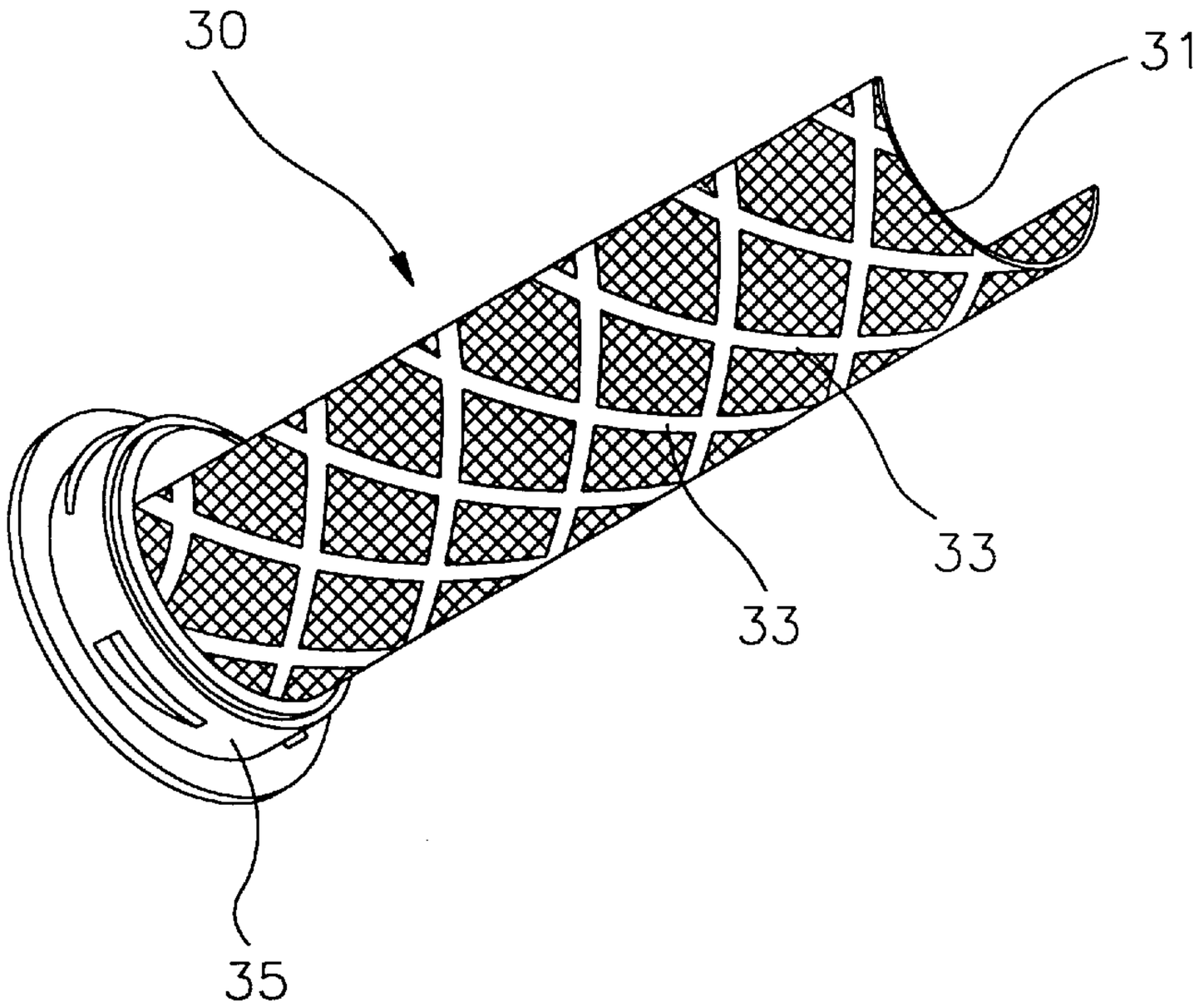


FIG.3



FILTERING DEVICE FOR A WASHING MACHINE

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a filtering device for a washing machine, and more particularly to a filtering device installed in a pipe in which washing water circulates during a washing operation in order to filter dirt in washing water.

2. Prior Art

Generally, a washing machine which accommodates laundry and performs washing and dehydrating operations has, as shown in FIG. **1**, an outer-tub **1** installed in an outer-casing **10**, a washing tub **2** installed in the outer-tub **1** for accommodating laundry and water for washing, a pulsator **3** mounted on the bottom of the washing tub **2** for rotating the washing water in the washing tub **2**, a driving motor **4** disposed under the outer-tub **1** for driving the pulsator **3**, and a gear assembly **5** for transmitting the power of the driving motor **4** selectively to the pulsator **3** and the washing tub **2**.

During the washing operation, the power of the driving motor **4** is transmitted to the pulsator **3** through the gear assembly **5** in order to rotate the pulsator **3**, by which vortical water flow is generated in the washing tub **2**. The washing operation of the laundry accommodated in the washing tub **2** is performed by the vortical water flow generated by the pulsator **3**. In the dehydrating operation, the power of the driving motor **4** is transmitted to both the washing tub **2** and the pulsator **3**, so the washing tub **2** is rotated together with the pulsator **3** at a high speed. The dehydrating operation is performed by centrifugal force generated in that situation.

A drain pipe **11** is installed under the outer-tub **1**. The drain pipe **11** is connected with a drain hose **12** which is outside the outer-casing **10**. Between the drain pipe **11** and the drain hose **12**, a bellows **16** is installed. The bellows **16** controls the connection between the drain pipe **11** and the drain hose **12** to be opened or closed. At an end part of the drain pipe **11**, a circulating pipe **13** is bifurcated from the drain pipe **11**. At the position that the circulating pipe **13** bifurcates from the drain pipe **13**, a filtering device **20** is disposed. The circulating pipe **13** connects the drain pipe **11** with the washing tub **2**. A pump **15** is installed in the middle area of the circulating pipe **13**.

During the washing operation, the bellows **16** operates to close the drain hose **12**, and the pump **15** operates to suck the washing water in the drain pipe **11**. Thus, the washing water in the outer-tub **1** is circulated into the washing tub **2** through the drain pipe **11**, the filtering device **20**, and the circulating pipe **13**, and at that time, the dirt in the washing water is filtered by the filtering device **20**. In the draining operation and the dehydrating operation, the bellows **16** opens the drain hose **12**, and then the washing water in the drain pipe **11** is discharged outside through the drain hose **12**.

FIG. **2** is a perspective view of the filtering device **20** disposed between the drain pipe **11** and the circulating pipe **13**. The filtering device **20** comprises a filtering web **22** which is formed with holes **23** for filtering dirt, and a knob member **21** attached to the filtering web **22**. The knob member **21** provides the knob part for assembling and disassembling the filtering device **20** with the washing machine. The dirt in the washing water circulating in the drain pipe **11** and the circulating pipe **13** is filtered by the filtering web **22**. Accordingly, the dirt in the washing tub **2** is reduced, so the washing operation is efficiently performed. In the draining operation, the washing water is discharged outside through the drain pipe **11** and the drain hose **12**.

However, in such a conventional filtering device **20** used in washing machine, there is a problem that the user should disassemble the filtering device **20** from the washing machine in order to remove the dirt adhered to the filtering web **22**, and thereafter reassemble the filtering device **20** to the washing machine after removing the dirt by hand. Although a possible effect may be that the dirt adhered to the filtering web **22** is removed a little by the washing water flowing in the drain pipe **11** and the drain hose **12** during the drain operation, the dirt cannot be removed effectively since the flowing direction of the washing water is constant. Therefore, the user should disassemble the filtering device **20** frequently to remove the dirt.

SUMMARY OF THE INVENTION

The present invention has been proposed to overcome the above described problems in the prior art, and accordingly it is an object of the present invention to provide a filtering device for use in a washing machine in which the dirt can be removed by washing water flowing during the drain operation, and accordingly the frequent manual cleaning is not needed.

To achieve the above object, the present invention provides a filtering device for use in a washing machine, said filtering device being installed between a drain pipe for draining washing water in a washing tub during a draining operation and a circulating pipe being bifurcated from said draining pipe for circulating the washing water flowing in said drain pipe into said washing tub during a washing operation, said filtering device for filtering dirt from the washing water circulating into said tub through said drain pipe and said circulating pipe, said filtering device comprising: a filtering web installed at a bifurcating entrance of said circulating pipe, said filtering web being disposed so that a planar direction thereof is equal to a flowing direction of the washing water in said drain pipe; and a plurality of ribs being disposed on said filtering web so as to form a lattice, said ribs being disposed so that longitudinal directions thereof have a predetermined angle against the flowing direction of the washing water, whereby the washing water flowing in said drain pipe is guided toward an entire area of said filtering device to be in uniform contact with said filtering web.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention will be better understood and its various objects and advantages will be more fully appreciated from the following description taken in conjunction with the accompanying drawings, in which:

FIG. **1** is a side sectional view of a general washing machine;

FIG. **2** is a perspective view of a conventional filtering device; and

FIG. **3** is a perspective view of a filtering device according to the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Hereinafter, the present invention will be described in detail with reference to the drawings. Also, the present invention will be described with reference to the conventional washing machine shown in FIG. **1**, and the same parts illustrated in FIG. **1** will be referred to by the same reference numerals.

FIG. **3** is a perspective view of a filtering device according to the present invention. The filtering device **30** is, as in the washing machine shown in FIG. **1**, disposed at the bifurcated position of the circulating pipe **13** from the drain pipe **11**. The filtering device **30** comprises a filtering web **31** for filtering dirt, a knob member **35** attached to the filtering web **31**, and a plurality of ribs **33** disposed on the filtering web **31**. The filtering web **31** is installed at a bifurcating entrance of the circulating pipe **13**, and is disposed so that the planar direction thereof is equal with the flowing direction of the washing water in the drain pipe **11**. The dirt in the washing water circulating in the drain pipe **11** and the circulating pipe **13** is filtered by the filtering web **31**. Thus the amount of dirt in the washing tub **2** is reduced so the washing efficiency is enhanced. The knob member **35** provides the knob part for installing the filtering device **30** into the washing machine.

The ribs **33** are formed together with the filtering web **31**, and are disposed to form a lattice shape. The ribs **33** are disposed so that longitudinal directions thereof have a predetermined angle against the flowing direction of the washing water in the drain pipe **11**. Therefore, when the washing water flowing in the drain pipe **11** is in contact with the ribs **33**, it is guided toward the edge areas of the filtering web **31** by the ribs **33**. Thus the washing water is distributed to the entire area of the filtering web **31** so as to be in uniform contact with the filtering web **31**.

In the washing operation, the bellows **16** operates to close the drain hose **12**, and the pump **15** operates to suck the washing water in the drain pipe **11**. Thus, the washing water in the outer-tub **1** is circulated into the washing tub **2** through the drain pipe **11**, the filtering device **30**, and the circulating pipe **13**, and during that time, the dirt in the washing water is filtered by the filtering web **31**. In the draining operation and the dehydrating operation, the drain hose **12** is opened by the bellows **16**, then the washing water in the drain pipe **11** is discharged outside through the drain hose **12**. During that time, the washing water flowing in the drain pipe **12** is guided to the edge areas of the filtering web **31** by the ribs **33** which are disposed to be tilted against the flowing direction of the washing water. Therefore, the washing water becomes complex since the part of the washing water flows along the longitudinal direction of the ribs **33**, and the washing water becomes in uniform contact with the entire area of the filtering web **31** Then the washing water removes the dirt adhered to the filtering web. Since the dirt adhered to the filtering web **31** is removed by the washing water, the amount of the dirt adhered to the filtering web **31** is reduced, and the user doesn't have to disassemble the filtering device **30** from the washing machine frequently in order to clean it.

As described above, according to the present invention, the washing water guided by the ribs **33** during the draining operation efficiently removes the dirt filtered by the filtering web **31**, and the filtering device need not be cleaned frequently.

Although the present invention has been described and illustrated in detail, it is clearly understood that the same is by way of illustration and example only and is not to be taken by way of limitation, wherein the spirit and scope of the present invention is limited only by the terms of the appended claims.

What is claimed is:

1. A filtering device for a washing machine, said filtering device being installed between a drain pipe for draining washing water in a washing tub during a draining operation and a circulating pipe being bifurcated from said draining pipe for circulating the washing water flowing in said drain pipe into said washing tub during a washing operation, in order to filter dirt from the washing water circulating into said tub through said drain pipe and said circulating pipe, said filtering device comprising:

a filtering web having a plurality of holes therein and installed at a bifurcating entrance of said circulating pipe, said filtering web being disposed so that a planar direction thereof is equal to a flowing direction of the washing water in said drain pipe; and

a plurality of ribs being disposed on said filtering web so as to form a lattice, said ribs being disposed so that longitudinal directions thereof have a predetermined angle against the flowing direction of the washing water, whereby the washing water flowing in said drain pipe is guided toward an entire area of said filtering device to be in uniform contact with said filtering web.

2. The filtering device as claimed in claim **1**, wherein said ribs are formed together with said filtering web.

3. The filtering device as claimed in claim **2**, further comprising a knob member attached to said filtering web for providing a knob part when said filtering web is assembled and disassembled.

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